

REMARKS

The application has been amended to place the application in condition for allowance at the time of the next Official Action.

Claims 31-46 were previously pending in the application. Claims 34 and 36 are canceled; leaving claims 31-33, 35 and 37-46 for consideration.

Claims 31-46 were rejected under 35 USC 103(a) over SHEU 6,694,208 in view of applicants' disclosed prior art. That rejection is respectfully traversed

Claim 31 is amended and recites forming a plurality of first electrode test pads on a peripheral area of an uppermost surface of a first metal wiring layer for carrying out a provisional yield rate test and subjecting the wafer to a provisional yield-rate test in which it is examined by using the first electrode test pads.

As recognized in the Official Action, SHEU fails to disclose forming a plurality of first electrode test pads on an uppermost surface of a first metal wiring layer and performing a provisional yield-rate test using the first electrode test pads.

Applicant's disclosed prior art is offered for this feature. However, applicant's prior art also fails to disclose this feature.

Applicant's prior art Figure 16 shows a device having a first wiring layer 16' and a second wiring layer 48'. As

disclosed on page 36, lines 21-32, conventionally the only test performed is a yield rate test using element 56' of second wiring layer 48'. Applicant's disclosed prior art does not suggest forming a plurality of first electrode test pads on an uppermost surface of a first metal wiring layer and performing a provisional yield-rate test using the first electrode test pads.

As this feature is missing from each of the references, there is no rational underpinning that would support the legal conclusion of obviousness.

In addition, claim 31 is further amended and recites forming a plurality of second electrode test pads on a peripheral area of an uppermost surface of a second metal wiring layer and using the second electrode test pad to determine whether each of finished semiconductor devices on the wafer is acceptable or unacceptable and further processing the wafer when the wafer passes a genuine yield-rate test.

Column 2, lines 1-39 of SHEU disclose that a predetermined number of wafers are processed. The processed or completed wafers are then examined. When defects occur, adjustments are made to the process or equipment so that the detected defect will be minimized or eliminated on subsequent wafers.

Accordingly, any yield rate test of SHEU determines how further processing will proceed on the next batch of wafers. SHEU

does not disclose further processing the (same) wafer when the wafer passes a yield-rate test.

Modifying the yield rate test of SHEU to further process the same wafer would change the principle of operation of SHEU and thus, would not have been obvious to one having ordinary skill in the art.

For the reasons set forth above, claim 31 is believed patentable over the proposed combination of references.

Claims 32-38 depend from claim 31 and further define the invention and are also believed patentable at least for depending from an allowable independent claim.

Independent claim 39 recites performing a provisional yield-rate test to determine whether each first metal wiring layer is acceptable or unacceptable. The first metal wiring layer has a plurality of electrode pads formed on an uppermost surface thereof, for carrying out the provisional yield-rate test. The analysis above regarding claim 31 is equally applicable to claim 39 as to this feature.

In addition, claim 39 further recites forming a second test section vertically above a first test section. As the proposed combination of references does not teach two test sections, they could not disclose forming a second test section vertically above a first test section.

Claims 40-43 depend from claim 39 and further define the invention and are also believed patentable at least for depending from an allowable independent claim.

Independent claim 44 recites forming a first metal wiring layer having a first test section and performing a provisional yield-rate test using the first test section. Claim 44 also recites further processing the wafer to form a second metal wiring layer having a second test section above the first test section. The analysis above regarding claims 31 and 39 is equally applicable to claim 44.

Independent claim 45 includes similar features to that of claim 31 and the analysis above regarding claim 31 is equally applicable to claim 45.

As each of the recited features is not disclosed by the combination of references, their combination would not have been sufficient to render the claims *prima facie* obvious.

Support for the amended claims can be found at least in Figures 4-6.

Claims 31-46 were rejected under 35 USC 103(a) as unpatentable over MAEDA et al. WO 01/63661. That rejection is respectfully traversed.

Claim 31 is amended and recites forming a plurality of first electrode test pads on a peripheral area of an uppermost surface of a first metal wiring layer and subjecting the wafer to a provisional yield-rate test in which it is examined by using

only the first electrode test pads. Claim 31 further recites forming a plurality of second electrode test pads on a peripheral area of an uppermost surface of a second metal wiring layer and subjecting the wafer to a genuine yield-rate test in which it is examined by using only the second electrode test pads.

Thus, only peripheral electrode test pads are used for first and second yield tests.

In contrast, MAEDA uses different probe cards for each layer with his probe cards also including test points in the center of the probe card.

As each of the recited steps is not disclosed or suggested by MAEDA, claim 31 would not have been obvious in view of MAEDA.

Claims 32-38 depend from claim 31 and further define the invention and are also believed patentable at least for depending from an allowable independent claim.

Independent claim 39 is amended and recites a first metal wiring layer having a first test section provided only at a peripheral area and a second metal wiring layer having a second test section provided vertically above the first test section. Yield tests are performed on each of the test sections. The analysis above regarding claim 31 is equally applicable to claim 39.

Claims 40-43 depend from claim 39 and further define the invention and are also believed patentable at least for depending from an allowable independent claim.

Independent claim 44 is amended along the lines of claim 39 and the analysis above regarding claim 39 is equally applicable to claim 44

Independent claim 45 is amended and recites forming at least one first metal wiring layer having a first test section provided only at a peripheral area thereof and contacting the first test section with a probe contact. Claim 45 further recites further processing the wafer to form at least one second metal wiring layer over the at least one first metal wiring layer when the wafer passes a provisional yield-rate test, each at least one second metal wiring layer having a second test section provided above the first test section and subjecting the wafer to a genuine yield-rate test by contacting the second test section with the probe contact.

Thus, claim 45 requires test sections only at the peripheral area of the wafer and probing first and second test sections using the same probe contact.

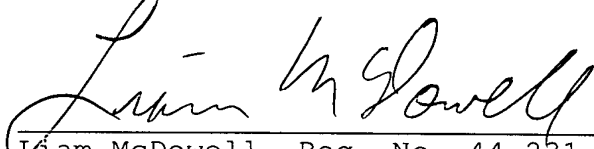
MAEDA discloses probe cards, not a probe contact. In addition, MAEDA uses different probe cards for testing each level and the wafers include test sections at the centers thereof. As each of the recited features is not disclosed or suggested by MAEDA, claim 45 would not have been obvious in view of MAEDA.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

A handwritten signature in cursive script, appearing to read "Liam McDowell", is written over a horizontal line.

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